Windbreak/Shelterbelt Renovation (Ac.) 650

DEFINITION

Widening, partial replanting, removing, and replacing selected trees and shrubs to improve an existing windbreak or shelterbelt.

PURPOSES

To improve existing shelterbelt, or field, farmstead, or feedlot windbreak, living fence, or living screens.

CONDITIONS WHERE PRACTICE APPLIES

In any windbreak that is no longer functioning or developing satisfactorily because of poor design, overcrowding, dead or dying trees, insufficient width, or extreme competition from sod or weeds.

CRITERIA

The following criteria will be used individually or in combination to restore or enhance the performance of a partially functioning or non-functioning windbreak or shelterbelt:

I - Thinning

- To reduce plant competition or reduce the density of the planting, individual trees or shrubs will be identified and marked for thinning.
- Trees and/or shrubs may be thinned not to exceed the row-to-row spacing and plant-to-plant spacing guidelines in Michigan NRCS Standard #380-Windbreak/Shelterbelt Establishment.
- Thinning will favor those plants that have the most vigor, those that respond to release, and those species that will best perform the desired function of the barrier.
- Thinning of some plants (mainly shrubs and deciduous trees) may result in stump sprouting. Where sprouting is not desired, an appropriate herbicide may be applied to the stump to kill the plant. Note: Application of all herbicides will conform to MSU Extension Service recommendations and to label instructions.
- Release of natural reproduction can be done in rows to conform to a windbreak design or be managed similar to a natural forest using forest stand improvement techniques. Refer to Michigan NRCS Standard #666 – Forest Stand Improvement.

II - Branch Pruning

- Pruning of plants will be used to remove diseased branches, alter the density of the planting, remove a safety hazard, improve the appearance, improve the potential for future wood or fruit products, and to reduce competition with adjacent plants.
- Pruning of certain deciduous tree species may result in epicormic branching (the new lateral branch growth from dormant buds beneath the bark). Epicormic branching will increase the density of the barrier but can lower the quality of future wood products cut from trees.
- Where prevention of wind erosion is a desired function of the barrier, do not prune above a height of 4.5 feet (1.37m) from the ground.
- Pruning activities will be conducted according to guidelines in Michigan NRCS Standard #660 - Tree/Shrub Pruning.

III – Coppicing

- Coppicing is the cutting of trees and shrubs at their base and the resulting regrowth from root or stump sprouts. Coppicing is most effective where an increase in the ground level density of the barrier is desired.
- Where a deciduous shrub has become leggy and a denser barrier is desirable, cut the shrubs back

during dormancy to within 4 to 8 inches (10.16cm to 20.32cm) above the ground.

IV – Root Pruning

- Root pruning is the severing of tree and shrub roots and is done to reduce adverse competition between existing rows and newly planted rows or between windbreak/shelterbelts and adjacent crops.
- Locate all buried utilities and tile drains prior to root pruning.
- Root prune trees and shrubs no closer than their canopy drip line.
- Only one side of any row will be root pruned per year.
- Root prune during dormancy to a depth of 24 to 36 inches (.69m to .91m) by pulling a vertical blade or plow through the soil.
- Root prune at intervals of between 5 and 10 years.
- Cultivation over the furrow created by root pruning will aid to prevent suckering from the severed roots of certain species.

V - Reinforcement Planting

- To improve windbreak or shelterbelt density, additional rows of trees or shrubs will be added adjacent to or within an existing windbreak or shelterbelt. The existing growing space, amount of shade and root competition will be at acceptable levels to permit unimpeded growth to new plantings. *Note:* Extending the length of an existing windbreak is addressed in Michigan NRCS Standard #380-Windbreak/Shelterbelt Establishment.
- If an existing single row windbreak has deteriorated beyond renovation (function is lost) and needs replacement, consider temporarily leaving the existing row and:

  1) On an East-West windbreak, plant a new row of trees on the north side.

  2) On a North-South windbreak, plant a new row of trees on the east side and thin the existing row to a density of approximately 30%.

- Control grasses and competing herbaceous vegetation around newly planted trees by use of fabric weed barriers, organic mulching or by chemical treatment. *Note:* Cultivation and mowing as weed control measures are not recommended due to chance of mechanical injury to roots and boles of trees and tendency for mowing to increase root growth of competing vegetation.
- Use of all pesticides will conform to Michigan State University recommendations and the label.
- Livestock will be excluded from all windbreaks during and after renovation.
- Supplemental watering of newly planted trees/shrubs may be required.
- Species selected for reinforcement planting will be adapted to the soils, climate, and purpose. Refer to the Michigan NRCS Field Office Technical Guide, Section II-N, for a detailed listing of species suited to the soils at the site.
- Preference shall be given to non-invasive species in order to reduce the introduction of invasive plant species; provide management of existing invasive species; and minimize the economic, ecological and human health impacts that invasive species may cause. If native species are not adaptable or not proven effective for the planned use, then non-invasive, non-native species may be used. Refer to the Michigan Field Office Technical Guide, Section II, Invasive Plant Species, for plant materials identified as invasive species.

CONSIDERATIONS

- If trees are spaced closer than 12 feet (3.66m) and are in otherwise good condition, consider

thinning the windbreak by removing every other tree.

- Consider planting a shade-tolerant shrub (See Table 1) below the understory of an older, low-density windbreak to increase density and improve wildlife habitat.

- If more than 50% of the understory vegetation is made up of perennial grasses and broadleaved weeds, consider releasing the trees by applying an approved herbicide according to the label. If tillage is used, do not till deeper than 3 inches (7.6cm) to prevent damage to tree roots and use extreme care not to damage tree boles.

- Consider removing any row of deciduous trees if it may crowd, overtop, or suppress an adjacent row of conifers.

- Consider thinning a shrub row if it is located upwind of newly planted conifers and can cause damaging snowdrifts on the young trees.

- Consider planting balled and burlapped, container-grown or 2-1 size transplants when reinforcing existing single-row windbreaks. Loss is more critical in these designs so larger planting stock may increase survival and growth rates.

- Select shade-tolerant species whenever possible for reinforcements within or adjacent to an existing windbreak/shelterbelt. See *Table 1* for list of shade-tolerant trees/shrubs.

- Spacing of rows within a windbreak may be adjusted, within limits, to accommodate mechanical equipment.

- Plants, which may be alternate hosts to undesirable pests, should be avoided when selecting species for reinforcement.

- Consider wildlife needs when selecting tree/ shrub species for reinforcement and inter-planting. Refer to Tables 3 and 4 of standard #380-Windbreak/Shelterbelt Establishment for list of species desirable for wildlife.

- Consider species diversity to avoid loss of function due to species-specific pests.

- Consider the potential effects of installation and operation of windbreak/shelterbelt renovation on the cultural, archaeological, historical, and economic resources.

Trees	**Shrubs**
Balsam Fir	Witch Hazel
White Ash	Elderberry
Black, Sugar, Red Maple	Flowering Dogwood
Serviceberry	Canada Yew
Red Oak	Spicebush
Redbud	Highbush Cranberry
American Beech	Winterberry
White, Black Spruce	Maple-leaf Viburnum
Hemlock	Nannyberry

Table 1. Shade-Tolerant Trees/ Shrubs

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan or other acceptable documentation. Plans and specifications for this practice will address the selected method(s) for windbreak renovation, site preparation if needed; species selected for planting if applicable as well as any protection needed for the site.

Minimum documentation for certification required for this practice includes: map showing location of windbreak to be renovated, treatment method(s) for renovation and type of equipment to be used; species planted or to be regenerated, growth data (windbreak suitability groups, Section II of the Michigan NRCS Field Office Technical Guide) or other data supporting treatment selected and/or selection of species to be treated or planted.

OPERATION AND MAINTENANCE

The following practices shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the

practice (operation) and repair and upkeep of the practice (maintenance):

- Replacement of dead trees or shrubs will be continued throughout the life of the windbreak to ensure its functionality.
- Vegetative competition will be checked semi-annually and controlled as needed.
- Thin and prune the windbreak as needed to maintain its function.
- Monitor for pests. Repellents, poisons, protectors, and cages of various kinds may be needed to control rodent, deer and other animal damage.
- Livestock shall be excluded as necessary to maintain the intended purpose.
- Perform semi-annual inspections to ensure that the windbreak renovation is protected from excessive traffic, pests, pesticide use, livestock, and fire.
- Maintain central stems on trees by pruning to eliminate forks and multiple leaders. See Michigan NRCS Standard #660a – Tree/Shrub Pruning and Michigan Conservation Sheet #660 – Tree/Shrub Pruning for further details.
- Following severe storms, check windbreak for mechanical damage and evidence of sediment deposits, erosion, or concentrated flow damage to the treated area. Perform prompt corrective action as needed.

REFERENCES

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